CLAIMS

What is claimed is:

1. A method for generating a frame indicating that traffic flow should be paused to a network device, the traffic flow having varying priority levels, the method comprising:

placing a value signifying that the frame indicates that traffic flow should be paused in a type/length field in the frame;

placing a value signifying that traffic flow should be paused or not paused according to its priority level in an opcode field in the frame;

creating a priority mask field in the frame; and

placing a value signifying which priority levels should be paused in said priority mask field in the frame.

2. The method of claim 1, wherein said placing a value signifying that traffic flow should be paused or not paused according to its priority level in an opcode field in the frame includes placing a value signifying that traffic flow should be paused or not paused according to its priority level, and that the pausing will be for time indicated by a pause time field in the frame without regard for said priority level, in an opcode field in the frame if it is desired to use the same pause time for each priority level.

3. The method of claim 1, wherein said placing a value signifying that traffic flow should be paused or not paused according to its priority level in an opcode field in the frame includes placing a value signifying that traffic flow should be paused or not paused according to its

priority level, and that the pausing will be for times corresponding to each priority level indicated by a pause time field, in an opcode field in the frame if it is not desired to use the same pause time for each priority level.

4. The method of claim 3, further comprising:

placing a separate value for each possible priority level in said pause time field, said separate value indicating an independent pause time for each corresponding priority level.

5. The method of claim 4, wherein said pause time field is equal in size to the pause time field in a standard PAUSE frame multiplied by the number of possible priority levels.

6. The method of claim 1, wherein the frame is a PAUSE frame.

7. The method of claim 4, wherein said value signifying that the frame indicates that traffic flow should be paused is identical to values used to indicate standard PAUSE frames.

8. The method of claim 4, wherein said value signifying that traffic flow should be paused or not paused according to its priority level is a value not used by standard PAUSE frames in said opcode field.

9. A method for generating a frame indicating that traffic flow should be paused to a network device, the traffic flow having varying priority levels, the method comprising:

placing a value signifying that traffic flow should be paused or not paused according to its priority level in an type/length field in the frame;

creating a priority mask field in the frame; and

placing a value signifying which priority levels should be paused in said priority mask field in the frame.

10. The method of claim 9, further comprising:

placing a value signifying that the pausing will be for time indicated by a pause time field in the frame without regard for said priority level in an opcode field in the frame if it is desired to use the same pause time for each priority.

11. The method of claim 9, further comprising:

placing a value signifying that the pausing will be for times corresponding to each priority level indicated by a pause time field in an opcode field in the frame if it is desired to use the same pause time for each priority.

12. The method of claim 11, further comprising:

placing a separate value for each possible priority level in said pause time field, said separate value indicating an independent pause time for each corresponding priority level.

13. The method of claim 12, wherein said pause time field is equal in size to the pause time field in a standard PAUSE frame multiplied by the number of possible priorities.

14. The method of claim 9, wherein the frame is a PAUSE frame.

15. The method of claim 9, wherein said value signifying that traffic flow should be paused or not paused according to its priority level is a value not used by standard PAUSE frames in said type/length field.

16. A method for handling a frame in a network with traffic flow having varying priority levels, the method comprising:

examining a value in a type/length field in the frame to determine if it signifies that the frame indicates that traffic flow should be paused to a network device;

examining a value in an opcode field in the frame to determine if it signifies that traffic flow should be paused or not paused according to its priority level, if said value in said type/length field signified that the frame indicates that traffic flow should be paused to a network device; and

pausing traffic flow with priority levels corresponding to levels signified by a value in a priority mask field in the frame if said value in said opcode field signified that traffic flow should be paused or not paused according to its priority level and if said value in said type/length field signified that the frame indicates that traffic flow should be paused to a network device.

17. The method of claim 16, wherein said examining a value in an opcode field further comprises examining a value in said opcode field to determine if it also signifies that the pausing will be for time indicate by a pause time field in the frame without regard to priority level and said pausing traffic flow further comprises pausing traffic flow with priority levels corresponding

to levels signified by a value in a priority mask field in the frame for a time period indicated by the pause time field in the frame without regard to priority level if said opcode field signifies that the pausing will be for time indicate by a pause time field in the frame without regard to priority level.

18. The method of claim 16, wherein said examining a value in an opcode field further comprises examining a value in said opcode field to determine if it also signifies that the pausing will be for times corresponding to each priority level indicated by a pause time and said pausing traffic flow further comprises pausing traffic flow with priority levels corresponding to levels signified by a value in a priority mask field in the frame for time periods indicated by a times corresponding to each priority level in a pause time field in the frame if said opcode field signifies that the pausing will be for times corresponding to each priority level indicated by a pause time.

19. The method of claim 18, wherein said times are a separate value for each possible priority level indicating an independent pause time for each corresponding priority level.

20. A method for handling a frame in a network with traffic flow having varying priority levels, the method comprising:

examining a value in a type/length field in the frame to determine if it signifies that the frame indicates that traffic flow should be paused to a network device and if it signifies that traffic flow should be paused or not paused according to its priority level; and

pausing traffic flow with priority levels corresponding to levels signified by a value in a priority mask field in the frame if said value in said type/length field signified that traffic flow should be paused to a network device and that traffic flow should be paused or not paused according to its priority level .

21. The method of claim 20, further comprising:

examining a value in an opcode field in the frame to determine if it signifies that the pausing will be for time indicate by a pause time field in the frame without regard to priority level; and

wherein said pausing traffic flow further comprises pausing traffic flow with priority levels corresponding to levels signified by a value in a priority mask field in the frame for a time period indicated by the pause time field in the frame without regard to priority level if said value in said opcode field signifies that the pausing will be for time indicate by a pause time field in the frame without regard to priority level.

22. The method of claim 20, further comprising:

examining a value in said type/length field to determine if it also signifies that the pausing will be for times corresponding to each priority level indicated by a pause time; and

wherein said pausing traffic flow further comprises pausing traffic flow with priority levels corresponding to levels signified by a value in a priority mask field in the frame for time periods indicated by a times corresponding to each priority level in a pause time field in the frame if said type/length field signifies that the pausing will be for times corresponding to each priority level indicated by a pause time.

23. The method of claim 22, wherein said times are a separate value for each possible priority level indicating an independent pause time for each corresponding priority level.

24. An apparatus for generating a frame indicating that traffic flow should be paused to a network device, the traffic flow having varying priority levels, the apparatus comprising:

a pause traffic flow value-to-type/length field placer;

a priority level based pause traffic flow value-to-opcode field placer coupled to said pause traffic flow value-to-type/length field placer;

a priority mask field creator coupled to said priority level based pause traffic flow value-to-opcode field placer; and

a paused priority level value-to-priority mask field placer coupled to said priority mask field creator.

25. The apparatus of claim 24, wherein said priority level based pause traffic flow value-to-opcode field placer includes a pause time without regard for priority level value-to-opcode field placer.

26. The apparatus of claim 24, wherein said priority level based pause traffic flow value-to-opcode field placer includes a pause times corresponding to priority level value-to-opcode field placer.

27. The apparatus of claim 26, further comprising:

a priority level separate value-to-pause time field placer coupled to said priority level based pause traffic flow value-to-opcode field placer.

28. An apparatus for generating a frame indicating that traffic flow should be paused to a network device, the traffic flow having varying priority levels, the apparatus comprising:

a priority level based pause traffic flow value-to-type/length field placer;

a priority mask field creator coupled to said priority level based pause traffic flow value-to-type/length field placer; and

a paused priority level value-to-priority mask field placer coupled to said priority mask field creator.

29. The apparatus of claim 28, further comprising:

a pause time without regard for priority level value-to-opcode field placer coupled to said priority level based pause traffic flow value-to-type/length field placer.

30. The apparatus of claim 28, further comprising:

a pause times corresponding to priority level value-to-opcode field placer coupled to said priority level based pause traffic flow value-to-type/length field placer.

31. The apparatus of claim 30, further comprising:

a priority level separate value-to-pause time field placer coupled to said pause times corresponding to priority level value-to-opcode field placer.

32. The apparatus for handling a frame in a network with traffic flow having varying priority levels, the method comprising:

a type/length field value examiner;

an opcode field value examiner coupled to said type/length field value examiner; and

a priority level traffic flow pauser coupled to said opcode field value examiner.

33. The apparatus for handling a frame in a network with traffic flow having varying priority levels, the method comprising:

a type/length field value examiner;

a priority level traffic flow pauser coupled to said type/length field value examiner.

34. An apparatus for generating a frame indicating that traffic flow should be paused to a network device, the traffic flow having varying priority levels, the apparatus comprising:

means for placing a value signifying that the frame indicates that traffic flow should be paused in a type/length field in the frame;

means for placing a value signifying that traffic flow should be paused or not paused according to its priority level in an opcode field in the frame;

means for creating a priority mask field in the frame; and

means for placing a value signifying which priority levels should be paused in said priority mask field in the frame.

35 The apparatus of claim 34, wherein said means for placing a value signifying that traffic flow should be paused or not paused according to its priority level in an opcode field in the frame

includes means for placing a value signifying that traffic flow should be paused or not paused according to its priority level, and that the pausing will be for time indicated by a pause time field in the frame without regard for said priority level, in an opcode field in the frame if it is desired to use the same pause time for each priority level.

36. The apparatus of claim 34, wherein said means for placing a value signifying that traffic flow should be paused or not paused according to its priority level in an opcode field in the frame includes means for placing a value signifying that traffic flow should be paused or not paused according to its priority level, and that the pausing will be for times corresponding to each priority level indicated by a pause time field, in an opcode field in the frame if it is not desired to use the same pause time for each priority level.

37. The apparatus of claim 36, further comprising:

means for placing a separate value for each possible priority level in said pause time field, said separate value indicating an independent pause time for each corresponding priority level.

38. The apparatus of claim 37, wherein said pause time field is equal in size to the pause time field in a standard PAUSE frame multiplied by the number of possible priority levels.

39. The apparatus of claim 34, wherein the frame is a PAUSE frame.

40. The apparatus of claim 37, wherein said value signifying that the frame indicates that traffic flow should be paused is identical to values used to indicate standard PAUSE frames.

41. The apparatus of claim 37, wherein said value signifying that traffic flow should be paused or not paused according to its priority level is a value not used by standard PAUSE frames in said opcode field.

42. An apparatus for generating a frame indicating that traffic flow should be paused to a network device, the traffic flow having varying priority levels, the apparatus comprising:

means for placing a value signifying that traffic flow should be paused or not paused according to its priority level in an type/length field in the frame;

means for creating a priority mask field in the frame; and

means for placing a value signifying which priority levels should be paused in said priority mask field in the frame.

43. The apparatus of claim 42, further comprising:

means for placing a value signifying that the pausing will be for time indicated by a pause time field in the frame without regard for said priority level in an opcode field in the frame if it is desired to use the same pause time for each priority.

44. The apparatus of claim 42, further comprising:

means for placing a value signifying that the pausing will be for times corresponding to each priority level indicated by a pause time field in an opcode field in the frame if it is desired to use the same pause time for each priority.

45. The apparatus of claim 44, further comprising:

means for placing a separate value for each possible priority level in said pause time field, said separate value indicating an independent pause time for each corresponding priority level.

46. The apparatus of claim 45, wherein said pause time field is equal in size to the pause time field in a standard PAUSE frame multiplied by the number of possible priorities.

47. The apparatus of claim 42, wherein the frame is a PAUSE frame.

48. The apparatus of claim 42, wherein said value signifying that traffic flow should be paused or not paused according to its priority level is a value not used by standard PAUSE frames in said type/length field.

49. An apparatus for handling a frame in a network with traffic flow having varying priority levels, the apparatus comprising:

means for examining a value in a type/length field in the frame to determine if it signifies that the frame indicates that traffic flow should be paused to a network device;

means for examining a value in an opcode field in the frame to determine if it signifies that traffic flow should be paused or not paused according to its priority level, if said value in said type/length field signified that the frame indicates that traffic flow should be paused to a network device; and

means for pausing traffic flow with priority levels corresponding to levels signified by a value in a priority mask field in the frame if said value in said opcode field signified that traffic flow should be paused or not paused according to its priority level and if said value in said type/length field signified that the frame indicates that traffic flow should be paused to a network device.

50. The apparatus of claim 49, wherein said means for examining a value in an opcode field further comprises means for examining a value in said opcode field to determine if it also signifies that the pausing will be for time indicate by a pause time field in the frame without regard to priority level and said means for pausing traffic flow further comprises means for pausing traffic flow with priority levels corresponding to levels signified by a value in a priority mask field in the frame for a time period indicated by the pause time field in the frame without regard to priority level if said opcode field signifies that the pausing will be for time indicate by a pause time field in the frame without regard to priority level.

51. The apparatus of claim 49, wherein said means for examining a value in an opcode field further comprises means for examining a value in said opcode field to determine if it also signifies that the pausing will be for times corresponding to each priority level indicated by a pause time and said means for pausing traffic flow further comprises means for pausing traffic

flow with priority levels corresponding to levels signified by a value in a priority mask field in the frame for time periods indicated by a times corresponding to each priority level in a pause time field in the frame if said opcode field signifies that the pausing will be for times corresponding to each priority level indicated by a pause time.

52. The apparatus of claim 51, wherein said times are a separate value for each possible priority level indicating an independent pause time for each corresponding priority level.

53. An apparatus for handling a frame in a network with traffic flow having varying priority levels, the apparatus comprising:

means for examining a value in a type/length field in the frame to determine if it signifies that the frame indicates that traffic flow should be paused to a network device and if it signifies that traffic flow should be paused or not paused according to its priority level; and

means for pausing traffic flow with priority levels corresponding to levels signified by a value in a priority mask field in the frame if said value in said type/length field signified that traffic flow should be paused to a network device and that traffic flow should be paused or not paused according to its priority level .

54. The apparatus of claim 53, further comprising:

means for examining a value in an opcode field in the frame to determine if it signifies that the pausing will be for time indicate by a pause time field in the frame without regard to priority level; and

wherein said means for pausing traffic flow further comprises means for pausing traffic flow with priority levels corresponding to levels signified by a value in a priority mask field in the frame for a time period indicated by the pause time field in the frame without regard to priority level if said value in said opcode field signifies that the pausing will be for time indicate by a pause time field in the frame without regard to priority level.

55. The apparatus of claim 53, further comprising:

means for examining a value in said type/length field to determine if it also signifies that the pausing will be for times corresponding to each priority level indicated by a pause time; and

wherein said means for pausing traffic flow further comprises means for pausing traffic flow with priority levels corresponding to levels signified by a value in a priority mask field in the frame for time periods indicated by a times corresponding to each priority level in a pause time field in the frame if said type/length field signifies that the pausing will be for times corresponding to each priority level indicated by a pause time.

56. The apparatus of claim 55, wherein said times are a separate value for each possible priority level indicating an independent pause time for each corresponding priority level.

57. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for generating a frame indicating that traffic flow should be paused to a network device, the traffic flow having varying priority levels, the method comprising:

placing a value signifying that the frame indicates that traffic flow should be paused in a type/length field in the frame;

placing a value signifying that traffic flow should be paused or not paused according to its priority level in an opcode field in the frame;

creating a priority mask field in the frame; and

placing a value signifying which priority levels should be paused in said priority mask field in the frame.

58. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for generating a frame indicating that traffic flow should be paused to a network device, the traffic flow having varying priority levels, the method comprising:

placing a value signifying that traffic flow should be paused or not paused according to its priority level in an type/length field in the frame;

creating a priority mask field in the frame; and

placing a value signifying which priority levels should be paused in said priority mask field in the frame.

59. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for handling a frame in a network with traffic flow having varying priority levels, the method comprising:

examining a value in a type/length field in the frame to determine if it signifies that the frame indicates that traffic flow should be paused to a network device;

examining a value in an opcode field in the frame to determine if it signifies that traffic flow should be paused or not paused according to its priority level, if said value in said type/length field signified that the frame indicates that traffic flow should be paused to a network device; and

pausing traffic flow with priority levels corresponding to levels signified by a value in a priority mask field in the frame if said value in said opcode field signified that traffic flow should be paused or not paused according to its priority level and if said value in said type/length field signified that the frame indicates that traffic flow should be paused to a network device.

60. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for handling a frame in a network with traffic flow having varying priority levels, the method comprising:

examining a value in a type/length field in the frame to determine if it signifies that the frame indicates that traffic flow should be paused to a network device and if it signifies that traffic flow should be paused or not paused according to its priority level; and

pausing traffic flow with priority levels corresponding to levels signified by a value in a priority mask field in the frame if said value in said type/length field signified that traffic flow should be paused to a network device and that traffic flow should be paused or not paused according to its priority level .